### Studies Plan

**EDMX - Materials science and Engineering 2018-19**

#### Core courses

<table>
<thead>
<tr>
<th>Courses</th>
<th>Language Code</th>
<th>Section</th>
<th>Teacher</th>
<th>Exam</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>3D Electron Microscopy and FIB-Nanotomography</td>
<td>E</td>
<td>MSE-704</td>
<td>Cantoni</td>
<td>Project report</td>
<td>1</td>
</tr>
<tr>
<td>CCMX Advanced Course - Additive Manufacturing of Polymeric Materials - 3D Camp</td>
<td>E</td>
<td>MSE-661</td>
<td>Bourban, Various lecturers</td>
<td>Oral presentation</td>
<td>1</td>
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<tr>
<td>CCMX Advanced Course - Advanced X-ray Diffraction Methods for Coatings: strain, defects and deformation analysis of thin films</td>
<td>E</td>
<td>MSE-628</td>
<td>Dommann, Neels</td>
<td>Written</td>
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<tr>
<td>CCMX Advanced Course - From Additive Manufacturing to Field-assisted Sintering</td>
<td>E</td>
<td>MSE-713</td>
<td>Bowen, Derlet, Zhao</td>
<td>Written</td>
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<tr>
<td>CCMX Advanced Course - Inorganic Particle Synthesis by Precipitation: From Nanoparticles to Self-organised Mesocrystals and from Theory to Practice</td>
<td>E</td>
<td>MSE-653</td>
<td>Bowen, Hofmann, Niederberger, Testino</td>
<td>Written</td>
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<tr>
<td>CCMX Advanced Course - Instrumented Nanoindentation (Next time 26 - 28 September, 2018)</td>
<td>E</td>
<td>MSE-656</td>
<td>Bushby, Randall</td>
<td>Oral</td>
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<tr>
<td>CCMX Summer School - Characterisation of Materials (2017)</td>
<td>E</td>
<td>MSE-805</td>
<td>Cantoni, Michaud, Various lecturers</td>
<td>Oral presentation</td>
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<tr>
<td>CCMX Winter School - Additive Manufacturing of Metals and the Material Science Behind It</td>
<td>E</td>
<td>MSE-657</td>
<td>Ceriotti, Logé, Various lecturers</td>
<td>Oral presentation</td>
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<tr>
<td>CCMX Winter School - Nanoparticles: From Fundamentals to Applications in Life Sciences</td>
<td>E</td>
<td>MSE-632</td>
<td>Various lecturers</td>
<td>Oral presentation</td>
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<tr>
<td>CCMX Winter School - Surface Science: Fundamentals, Properties and Selected Applications (Next time: From 27January to 1 February 2019 - You must register for this course on the website ccmx.epfl.ch)</td>
<td>E</td>
<td>MSE-664</td>
<td>Brune, Dommann, Mischler, Various lecturers</td>
<td>Oral presentation</td>
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</table>

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Code</th>
<th>Language</th>
<th>Instructor(s)</th>
<th>Type</th>
<th>Credits</th>
<th>Time</th>
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<tbody>
<tr>
<td>Crystal growth by epitaxy</td>
<td>MSE-649</td>
<td>EDMX</td>
<td>Fontcuberta</td>
<td>Multiple</td>
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<tr>
<td>Crystallography of structural phase transformations</td>
<td>MSE-651</td>
<td>EDMX</td>
<td>Cayron</td>
<td>Written</td>
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<tr>
<td>Design and analysis of experiments in materials science and engineering</td>
<td>MSE-629</td>
<td>EDMX</td>
<td>Lemaitre</td>
<td>Written</td>
<td>2</td>
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<tr>
<td>Effects of radiation on materials</td>
<td>MSE-600</td>
<td>EDMX</td>
<td>Bertsch, Dai, Pouchon, Schäublin, Seiffert, Spätig</td>
<td>Oral</td>
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<tr>
<td>Electrochemistry in Corrosion Research</td>
<td>MSE-658</td>
<td>EDMX</td>
<td>Mischler, Various lecturers</td>
<td>Project report</td>
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<tr>
<td>Electron Microscopy for Life Science</td>
<td>MSE-638</td>
<td>EDMX</td>
<td>Demurtas, Knott</td>
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<tr>
<td>Laser Materials Processing</td>
<td>MSE-662</td>
<td>EDMX</td>
<td>Hoffmann, Leinenbach, Wasmer</td>
<td>Oral</td>
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<tr>
<td>Methods of Modelling and Simulation of Materials Science</td>
<td>MSE-641</td>
<td>EDMX</td>
<td>Carter, Keane</td>
<td>Oral presentation</td>
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<tr>
<td>Modeling of advanced composites: processing and mechanical properties</td>
<td>MSE-710</td>
<td>EDMX</td>
<td>Hôte(s), académiques(s), Michaud</td>
<td>Multiple</td>
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<tr>
<td>Nanofabrication with focused electron and ion beams</td>
<td>MSE-619</td>
<td>EDMX</td>
<td>Hoffmann, Utke</td>
<td>Multiple</td>
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<tr>
<td>Non-destructive evaluation methods</td>
<td>MSE-610</td>
<td>EDMX</td>
<td>Lüthi</td>
<td>Oral</td>
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<tr>
<td>Optical Materials: Fundamental concepts and recent developments</td>
<td>MSE-643</td>
<td>EDMX</td>
<td>Dasgupta, Sorin</td>
<td>Oral</td>
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<tr>
<td>Piezoelectric materials, properties and devices</td>
<td>MSE-611</td>
<td>EDMX</td>
<td>Damjanovic</td>
<td>Written</td>
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<tr>
<td>Powder Characterisation and Dispersion</td>
<td>MSE-709</td>
<td>EDMX</td>
<td>Bowen</td>
<td>Written</td>
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<tr>
<td>Powder Diffraction School - Modern Syncrotron Methods</td>
<td>MSE-663</td>
<td>EDMX</td>
<td>Casati, Various lecturers</td>
<td>Oral</td>
<td>2</td>
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<tr>
<td>Scanning and Analytical Transmission Electron Microscopy</td>
<td>MSE-635</td>
<td>EDMX</td>
<td>Alexander, Cantoni, Hébert, La Grange</td>
<td>Oral presentation</td>
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</tbody>
</table>
### Courses

#### Scanning electron microscopy techniques (a)
- **Course Code:** MSE-636(a)  
- **Section:** EDMX  
- **Teacher:** Cantoni La Grange  
- **Method:** Written  
- **Credit:** 1

#### Scanning electron microscopy techniques (b)
- **Course Code:** MSE-636(b)  
- **Section:** EDMX  
- **Teacher:** Cantoni La Grange  
- **Method:** Written  
- **Credit:** 1

#### Science and technology of UV-induced polymerization
- **Course Code:** MSE-703  
- **Section:** EDMX  
- **Teacher:** Leterrier Nouzille Sangermano  
- **Method:** Term paper  
- **Credit:** 1

#### Statistical methods in atomistic computer simulations
- **Course Code:** MSE-639  
- **Section:** EDMX  
- **Teacher:** Ceriotti  
- **Method:** Project report  
- **Credit:** 2

#### Transmission electron microscopy and diffraction (a)
- **Course Code:** MSE-637(a)  
- **Section:** EDMX  
- **Teacher:** Alexander La Grange Laub  
- **Method:** Written  
- **Credit:** 1

#### Transmission electron microscopy and diffraction (b)
- **Course Code:** MSE-637(b)  
- **Section:** EDMX  
- **Teacher:** Alexander La Grange Laub  
- **Method:** Written  
- **Credit:** 1

#### Transport processes in cementitious materials
- **Course Code:** MSE-665  
- **Section:** EDMX  
- **Teacher:** Georget Various lecturers  
- **Method:** Written  
- **Credit:** 1

#### X-Ray Analysis for thin films
- **Course Code:** MSE-627  
- **Section:** EDMX  
- **Teacher:** Dommann  
- **Method:** Written  
- **Credit:** 2

#### Other doctoral courses (EDOC)

#### Challenges and Opportunities in Energy Research
- **Course Code:** CHE-803  
- **Section:** EDCH  
- **Teacher:** Buonsanti Various lecturers  
- **Exam:** Written & Oral  
- **Credit:** 2

#### Master courses

#### Seminar series on advances in materials (autumn)
- **Course Code:** MSE-470(a)  
- **Section:** MX  
- **Teacher:** Amstad Tileli  
- **Exam:** Written  
- **Credit:** 2

#### Seminar series on advances in materials (spring)
- **Course Code:** MSE-470(b)  
- **Section:** MX  
- **Teacher:** Amstad Tileli  
- **Exam:** Written  
- **Credit:** 2

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